POSITION STATEMENT

CSANZ and ACRA Position Statement on Quality Use of Telehealth in Cardiovascular Care

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Statement of Document Governance

This is a Position Statement of the Cardiac Society of Australia and New Zealand (CSANZ). Its development was initiated and co-chaired by Professor Sally Inglis, Adjunct Associate Professor Carolyn Astley, and Ms Carmel Bourne, representing CSANZ (S.C.I.) and the Australian Cardiovascular Health and Rehabilitation Association (ACRA) (C.A., C.B.). The writing of this document was initiated in May 2022, endorsed by the CSANZ on 14 August 2025 and is due for review and update in August 2030. Content has undergone external consultation and/or peer review. Conflict of interest statements have been provided by all writing group members (Appendix A).

The writing group is committed to upholding the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP), principles of Te Tiriti o Waitangi, and the Uluru Statement from the Heart. We recognise enduring impacts of colonisation and resulting inequities in heart health outcomes and healthcare access that Aboriginal and Torres Strait Islander, Māori, and Pasifika Peoples continue to face. We strive to support telehealth care delivery that works to bridge gaps, dismantle systemic barriers, and improve equitable outcomes. "I orea te tuatara ka patu ki waho", refers to a whakataukī (traditional Māori proverb) meaning 'a problem is solved by continuing to find solutions'. We acknowledge Aboriginal and Torres Strait Islander Peoples as the traditional custodians of their lands, and Māori as tangata whenua in Aotearoa New Zealand.

Disclaimer

The CSANZ position statements represent the views of CSANZ and were produced after careful consideration of the scientific and medical knowledge and the evidence available at the time of dating.

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Purpose

Healthcare delivery is being transformed by information and communication technologies, broadly referred to as telehealth. This position statement is a reference for cardiovascular health stakeholders in Australia and New Zealand that provides evidence-based practical guidance for effective use of telehealth across all disciplines of adult cardiovascular care, as a complementary tool to in-person care when appropriate and informs healthcare policy makers about current knowledge and practice.

Use of the Document

This document is intended for clinicians, health workers and healthcare organisations who are planning to establish a new cardiovascular telehealth service or optimise or evaluate an existing cardiovascular telehealth service. Healthcare practitioners must be aware of and adhere to professional obligations as set out by relevant regulatory authorities for using telehealth safely and effectively. Abbreviations and acronyms used in the document are listed in Appendix B.

Key Principles

Key principles underpinning this statement include ensuring equity of access and experience, providing patient-centred and multidisciplinary care that is culturally safe, responsive, and inclusive, and addressing digital literacy. Successful implementation of telehealth requires evidence-informed strategies and approaches, and evidence-based technologies and training. Co-designing services with patients and healthcare professionals will promote inclusivity and responsiveness to diverse needs, including amongst Aboriginal, Torres Strait Islander, Māori, Pasifika, and culturally and linguistically diverse communities, people with disability and those with complex care needs. Ongoing evaluation will improve telehealth service quality and outcomes.

Introduction

The World Health Organisation defines telehealth as the use of information and communication technologies to support preventive, diagnostic, and interventional healthcare to improve individual and community health [1]. It enhances healthcare access and equity for patients, families, carers, and communities facing barriers such as geographic isolation, transport challenges, health limitations, disability, aging, competing responsibilities, or a preference for remote care [2,3].

The Coronavirus disease 2019 (COVID-19) pandemic served as a significant catalyst for adoption of telehealth in routine practice. While there was little evidence to guide effective implementation [4], position papers containing

the most up to date evidence at that time introduced telehealth as an important complementary modality for cardiovascular care (e.g., [2,5,6]). Evidence has advanced substantially since that time, and many practitioners have adopted telehealth in routine practice, complementary to in-person care.

Māori, Pasifika, Aboriginal and Torres Strait Islander populations demonstrated leadership in the adoption and adaptation of telehealth for self-determined scheduling of care, connecting with culturally-led health providers through decentralised models, and ensuring continuity of care for their communities [7–9]. This exemplifies Indigenous innovation in health service delivery and highlights the importance of culturally responsive, community-driven healthcare systems.

Telehealth also reduces carbon footprints and improves access during crises like heatwaves, bushfires and floods [10]. Growing evidence supports global cardiovascular health organisations [11–14], and government and healthcare funder recognition of value is being driven by a cultural shift and heightened community expectations about healthcare accessibility and flexibility.

Aim of the Position Statement

This position statement aims to provide clinicians and healthcare providers in Australia and New Zealand with evidence-based practical guidance for effective use of telehealth across all disciplines of adult cardiovascular care. It also aims to inform healthcare policy makers about current knowledge and practice. The statement positions telehealth as a complementary set of tools for augmenting access to, experiences of, and outcomes from patient-centred cardiovascular care and not as a replacement to in-person care.

Methods

This Position Statement was jointly developed by CSANZ and ACRA in accordance with CSANZ guidelines [15]. Statement development was overseen by a steering group comprising co-chairs (S.C.I., C.M.A., C.B.) and writing group co-chairs (A.C.S., N.K.B., S.C., J.C.R., E.E.T., J.M.H., N.S., A.D., K.B.). Authors were from multidisciplinary backgrounds including cardiology, nursing, nurse practitioners, pharmacy, dietetics, and exercise science. A prospective unpublished protocol outlined several stages.

Stage One defined scope and developed a template and guidance document. Scope included four key topics: integrated multidisciplinary telehealth, telehealth consultations, telehealth Nurse Practitioner-led care, and telehealth secondary prevention. Ethical, legal, funding and regulatory aspects of telehealth, as well as the roles of artificial intelligence and invasive or implanted devices are beyond the scope of this statement.

Stage Two appointed expert academic and clinician contributors via an open expression of interest, promoted through CSANZ and ACRA member newsletters. A patient advocacy representative for patient perspectives was incorporated. Contributors were assigned to topic-based writing groups and undertook rapid literature reviews. When available, emphasis was placed on higher levels of evidence (e.g., clinical guidelines and systematic reviews), and evidence from Australia and New Zealand.

Stage Three integrated topic-based literature reviews into a unified statement as findings identified principles that apply to multiple domains of cardiovascular care.

Stage Four involved peer review by two independent experts, incorporation of feedback, and submission to the CSANZ Quality and Standards Committee for consideration of endorsement.

Stage Five identified an inequitable focus on Western views of health and scientific evidence. The writing group was purposely expanded to ensure greater representation of Aboriginal and Torres Strait Islander, Māori, and Pasifika Peoples' perspectives on health and wellbeing, telehealth, and the creation and sharing of knowledge. The revised statement was resubmitted to the CSANZ Quality and Standards Committee for consideration of endorsement.

Principles of Effective Telehealth in Cardiovascular Care

Figure 1 visualises key principles outlined in this statement (see Appendix C for an overview of telehealth challenges and opportunities).

Culturally Safe, Responsive, and Inclusive Telehealth

Culturally safe, responsive, and inclusive telehealth must recognise and respect the distinct identities and needs of Aboriginal and Torres Strait Islander Peoples (Indigenous Australians), Māori (Tangata Whenua of Aotearoa New Zealand), Pasifika (Pacific Peoples of Melanesian, Micronesian, and Polynesian heritage), and culturally and linguistically diverse communities. These Peoples represent a wide range of ethnic, cultural, and language backgrounds across Australia and New Zealand [16,17]. These collective terms encompass diverse cultural identities, languages and migration histories that influence beliefs and behaviours that affect health, and contribute to inequities in healthcare access, use, and outcomes via dynamic intersections between disadvantage, discrimination, and racism [18,19]. We also acknowledge the diversity and intersectionality within and between cultural and ethnic groups, and the influence of multiple overlapping social, cultural, and structural factors on individual experiences. Recognising and responding to diversity and disparity is essential to ensure cardiovascular telehealth services are culturally safe, responsive, and inclusive.

We acknowledge culturally and linguistically diverse is a contested term that can homogenise diversities and inadvertently reinforce marginalisation [20]. We use it in the absence
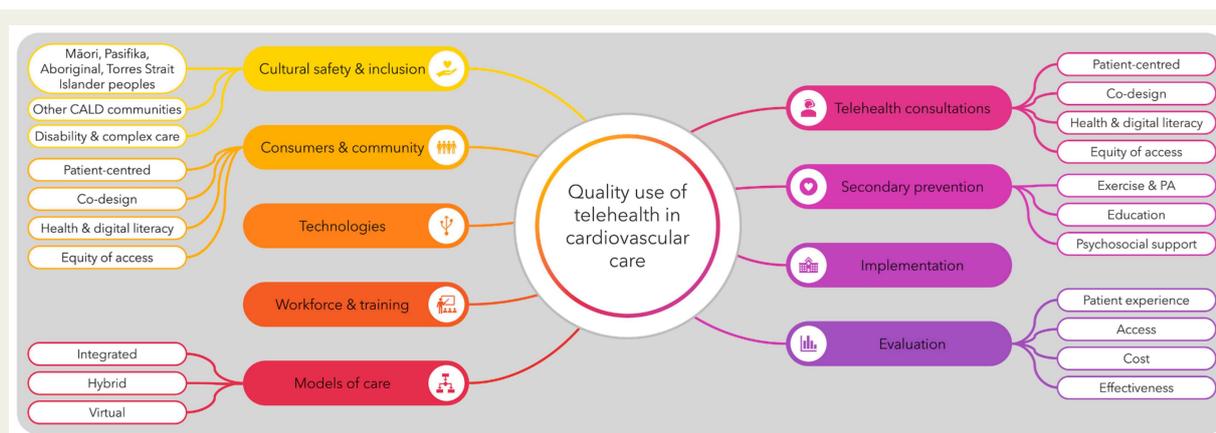
Figure 1 Key principles underpinning effective delivery of telehealth in cardiovascular care.
Abbreviations: CALD, culturally and linguistically diverse; PA, physical activity.

of more appropriate alternatives and advocate for empowering strengths-based, community-informed approaches.

Aboriginal, Torres Strait Islander, Māori, and Pasifika Peoples

Aboriginal and Torres Strait Islander, and Māori and Pasifika Peoples experience higher risks and burdens of cardiovascular disease (CVD), including at younger ages (for review, see [21–23]). Telehealth can improve healthcare access, use, and experiences by reducing the stress of separation from Country and kin for medical appointments, expanding Indigenous-led primary and community health service delivery, increasing family engagement in healthcare, and minimising exposure to discriminatory and racist prejudices (for review, see [24]).

Aboriginal and Torres Strait Islander, and Māori and Pasifika Peoples are leading the implementation of culturally responsive telehealth through co-creation and sharing of knowledge of best practice that embeds Indigenous ways of knowing, being and doing [24]. In New Zealand, Māori have demonstrated leadership by promoting self-determination, developing culturally responsive care models, and integrating traditional practices with digital health technologies. During COVID-19, Māori community-led telehealth innovations played a pivotal role in advocating for equitable access, addressing systemic healthcare disparities, and influencing policy reforms [7,25]. Kaupapa-based research further highlighted key principles—applicable across diverse communities—including using patient-friendly language, ensuring access to digital devices, and fostering strong relationships between health professionals and whānau (family) to support meaningful health engagement [7]. These contributions offer valuable insights for the systemic implementation of equitable and culturally informed healthcare practices [7].

In Australia, considerable work is underway to understand the strengths and challenges of telehealth in supporting Aboriginal and Torres Strait Islander healthcare, with a best practice framework currently in development [24]. These include authentic co-design approaches (e.g., participatory action research), culturally safe governance,

sustainable partnerships, trust, responsiveness, alignment with cultural values, digital literacy, culturally relevant telehealth content, and robust data security and confidentiality protections [26–28]. This work also highlighted the critical role of Aboriginal and Torres Strait Islander leadership in ensuring the cultural quality of telehealth evaluation [27], and of shared principles and priorities with First Nations communities in Aotearoa New Zealand, the Pacific Islands, Canada, and the United States of America [28].

However, there is potential to exacerbate existing inequities if telehealth is not appropriately structured and co-designed [7]. Various cultural health models reflect diversity among these communities, but common principles exist [29]. A comprehensive overview of diverse Aboriginal, Torres Strait Islander, Māori, and Pasifika views on health and healthcare is outside the scope of this statement. However, we briefly summarise some key principles as a starting point for understanding how and why telehealth must be tailored to ensure cultural safety and responsiveness.

Cultural health models articulate key values and practices, provide robust frameworks to develop clinical approaches that actively address inequities and promote sustained health and well-being, and emphasise that building trust and reciprocal relationships is essential for effective, culturally safe health care [30]. Aboriginal and Torres Strait Islander and Māori and Pasifika cultures embrace holistic, relational, and self-determined approaches to wellbeing that extend far beyond the Western biomedical model [31]. Health and wellbeing are a dynamic multi-dimensional balance of body, mind, spirit, and emotion, and neglect or imbalance in one area can affect the whole [32]. Health and wellbeing are built on foundational principles of strong and healthy families and communities (Whānau ora, in Māori culture), cultural and spiritual flourishing (Mauri ora, in Māori culture), and connection to lands, waters, and skies (Wai ora, in Māori culture). Connectedness within extended family, community, and cultural networks is a foundation and important indicator of wellness (e.g., Whanaungatanga, in Māori culture). Intentional processes of building genuine, trust-based

reciprocal relationships (e.g., Whakawhanaungatanga, in Māori culture) are critical for health practitioners engaging with Aboriginal, Torres Strait Islander, Māori, and Pasifika communities, as is recognising the profound and on-going impact of colonisation, urbanisation, racism, and marginalisation. In practical terms, culturally-centred models of care incorporate cultural practices and protocols (Tikanga, in Māori culture) informed by core cultural values such as compassion and empathy (Aroha, in Māori culture), kindness and hospitality (Manaakitanga, in Māori culture), binding energy that connects all life (Mauri, in Māori culture), and the importance of spiritual wellbeing (Wairua, in Māori culture) [29].

Several New Zealand frameworks underscore the importance of culturally responsive, community-driven approaches to telehealth design and implementation. The Digital Health Framework (2020) [25] prioritises equitable access, adhering to Te Tiriti o Waitangi and the Pae Ora (Healthy Futures) Act, and ensuring Māori leadership in digital health delivery to uphold cultural safety and mana-enhancing patient experiences. The National Telehealth Service Plan (2022) [33] aligns with Whakamaua (Māori Health Action Plan) [34] to improve Māori health outcomes and ensure equity. Comparable Australian frameworks do not currently address culturally responsive, community driven approaches to telehealth design and implementation for Aboriginal and Torres Strait Islander Peoples. For Pasifika communities, culturally grounded models (e.g., Fonofale and Fa'afaletui [Samoan]; Fonua Ola and Kakala [Tongan]; Te Vaka Atafaga [Tokelauan]; Tivaevae [Cook Islands]) provide essential frameworks for designing and delivering telehealth services that are culturally safe, meaningful, accessible, and empowering [35]. Together, these Indigenous and Pasifika-led frameworks and practices offer a powerful foundation for the systemic implementation of equitable, culturally safe, and community-driven telehealth across Australia and Aotearoa New Zealand.

Other culturally and linguistically diverse communities

Given the breadth of cultural identities encompassed by the term culturally and linguistically diverse, it is not possible to review specific principles for all. Nonetheless, lower telehealth use among culturally and linguistically diverse communities is contributed to by factors such as digital literacy and accessibility, intervention content and delivery, first- and English-language literacy, cultural representation and appropriateness, standard of care received, privacy and confidentiality, social connectedness [36]. Engaging culturally and linguistically diverse communities in all stages of telehealth service design is recommended to enhance acceptability, appropriateness, and accessibility (see *Co-design of telehealth models of care* for further information about collaborative design) [37].

Culturally safe, responsive, and inclusive telehealth should be supported by strategies that address the specific needs of distinct cultural and religious groups. Language support services, staff cultural competence training, adaptive service delivery, telehealth technology provision and support, and use of digital health navigators have been reported to support

telehealth reach, adoption, effectiveness, and/or satisfaction [17]. Australia's National Disability Insurance Scheme provides an example strategy that targets infrastructure, staff capability, communications accessibility, fit-for-purpose services, data use, and outreach services as key priorities [38]. An accompanying action plan outlines practical goals, actions, and responsibilities to deliver the strategy [38].

People with disability or complex care needs

Telehealth may improve access to healthcare and increase independence for people with disability [39]. Telehealth can also provide access to healthcare for people with complex care needs and people at higher risk from infections, for example, people who are immunocompromised or pre- or post-transplant [40]. Without flexible design and consultation with the patient to understand their unique needs, telehealth may exacerbate inequities for people with disability. Disability is multifaceted and each person with disability will have unique needs and may require different adjustments to access telehealth. Understanding the unique needs and preferences for each person, providing training for healthcare providers and patients, and ensuring that telehealth systems are adaptable to individual needs have been identified as critical factors to address disability-specific barriers such as sensory impairments [39]. The World Health Organization has established global standards for accessibility of telehealth services [41] which detail technical requirements to ensure accessible service provision.

Consumers and Community

Patient-centred telehealth

Large-scale evidence about patient preferences is limited. Some findings suggest most patients consider telehealth is an acceptable way to receive healthcare and improve access, but some still prefer in-person consultations [42]. Preferences can be impacted by factors such as age, employment status, reason for consultation, and proximity to in-person services but are independent of education level, appointment type, self-rated health status, and socio-economic status [43–45]. Allowing patients to identify their preferred delivery model(s) is critical to manage varied preferences, while concurrently following guidelines around necessary in-person consultations, prescribing requirements and relevant state, territory and jurisdictional legislative requirements and professional obligations established by regulatory authorities for using telehealth safely and effectively [46]. Box 1 outlines a consumer viewpoint on telehealth in cardiovascular care written by consumer co-author T.H.

Co-design of telehealth models of care to ensure person-centred care

A collaborative design approach that prioritises the needs, preferences, and experiences of all stakeholders (e.g., patients and carers, whānau and community leaders, healthcare professionals, and health administration, management, operations and technical teams) can deliver more inclusive and

Box 1.   Consumer viewpoint on telehealth in cardiovascular care, written by consumer co-author (T.H.).

Telehealth has numerous benefits for people with cardiovascular conditions such as providing access to healthcare while at home (especially for regional and rural patients), alleviating anxiety, enabling prompt intervention to prevent complications and disease progression, reducing travel time, and cost associated with in-person medical visits. Patients from low socioeconomic backgrounds may face financial constraints for regular medical visits. However, conversely, patients from low socioeconomic backgrounds may not have access to technology therefore solutions such as loaning devices may need to be considered. Telehealth can reduce direct (transportation, parking, accommodation) and indirect (need to take leave from work) out-of-pocket expenses associated with in-person visits.

Telehealth can also promote patient engagement through virtual education programs, personalised guidance, and easy access and communication with healthcare teams. This empowers patients to take control of their health, make informed decisions, and adopt necessary lifestyle changes. While telehealth provides numerous benefits, it may not be suitable for all patients or appointments. One current frustration among consumers is the fragmented way patient information (e.g., test results, outcomes from recent consultations) is shared between healthcare providers and across healthcare modalities of delivery. This can lead to repeat tests being required and resharing of information at each appointment. In the future, as systems mature (e.g., electronic medical records, "My Health Record" [both in Australia and New Zealand]) and integrate with telehealth, patient information and results should become more accessible to all health care providers. Adequate infrastructure access and patient choice must be ensured.

effective solutions [47,48]. Stakeholders should be actively involved in telehealth service development, implementation, and evaluation to optimise accessibility for all, including vulnerable communities such as those with low health literacy, disability, and who need assistance of whānau, carers, or support workers to engage with telehealth.

Health and digital literacy

Health literacy goes beyond reading and comprehending health information to include the skills of appraising health information, accessing health services, engaging with healthcare providers, and sustaining positive health behaviours [49,50]. Digital literacy is a determinant of health and should be considered in a telehealth context [51,52]. It can be defined as the ability to use digital tools and platforms to access healthcare services, comprehend health information, communicate with providers, and actively manage personal health. It includes navigating telehealth systems, understanding digital health data, and applying learnings to make informed health decisions [53].

Equity of access to telehealth

Contributors to inequitable access, use, and experiences of in-person cardiovascular healthcare services are well established (e.g., female sex, older age, disability, lower socioeconomic status, lower health literacy, and cultural and linguistic diversity [54–56]). Many of these factors are also associated with lower use of telehealth services [54]. Living in rural and remote areas presents well-documented challenges but healthcare use can also be low in urban areas [55,57], so telehealth should not be confined to sparsely populated regions.

Telehealth helps to address traditional access barriers by extending the reach of cardiovascular care beyond clinical and community health centres. However, a concerted effort is required to avoid perpetuating existing inequities among people who are most in need of accessible care [58]. Offering telehealth alongside other delivery models and allowing patients and carers to choose options that best suit their individual preferences and needs—including hybrid models of care (see *Models of Care*)—can increase accessibility, inclusion, and participation.

Recommendations for optimising the impact of telehealth include providing targeted training to increase health and digital literacy for patients and healthcare professionals; involving patients, carers, clinicians, and support staff in telehealth service design (see *Co-design of telehealth models of care*); loaning telehealth technologies and consumables to patients when necessary; and ensuring telehealth services are culturally safe, responsive and inclusive (see *Culturally Safe, Responsive, and Inclusive Telehealth*) [59,60].

Telehealth Technologies

Information and communication technologies are evolving rapidly and can be used for numerous purposes in cardiovascular care (Table 1). Technology selection should consider specific telehealth objectives—which may vary across domains of cardiovascular care and between providers—and capabilities to support culturally safe, responsive, and inclusive care (see *Culturally Safe, Responsive, and Inclusive Telehealth and Consumers and Community*).

Models of Care

International practice guidelines recommend innovative care models based on the concept of integrated care [61,62]. Four fundamental components include: 1) *patient-centred care*; identifies individual needs, values and preferences 2)

Table 1 Overview of telehealth technologies.

Technology	Use in telehealth
Telephone	Assessment; goal setting; self-management education and counselling. Supports individual and group interactions.
Videoconference	As per telephone, with additional non-verbal communication, interpersonal connection, and resource sharing (screen and file share); exercise instruction/monitoring/coaching.
Website	A collection of interconnected webpages, identified by a common domain name and published on at least one web server. Websites are typically accessed through the internet and can include varied content such as text, images, video and interactive elements.
Email	Assessment, receiving objective (e.g., activity tracking) and subjective (e.g., behaviour diary) patient data, delivering education resources.
Text message (SMS)	To patients: behaviour change education; exercise prescription; promote engagement and adherence. From patients: assist with self-management education, develop critical thinking skills for action plans or sick days.
Wearable devices	Measure vital signs (e.g., heart rate, electrocardiogram, blood pressure, oxygen saturation) and lifestyle behaviours (e.g., physical activity, sedentary behaviour, sleep)
Smartphone	As per telephone, videoconference, email, text message; some wearable devices (lifestyle behaviour measurement) plus: run mobile and web applications; access Internet/websites; receive push notifications; capture images (e.g., dietary assessment, medication); send and receive data for synchronous or asynchronous remote monitoring by clinicians. Some functions require an internet connection.
Smart watch	Substantial overlap with smartphone (application functionality may be limited); may require pairing with smartphone for some features
Avatar	Is a digital representation of a person, often used in online environments such as video games, social media or within applications (known as "apps").
Chatbots	Software applications that simulate human-like conversation using text and voice commands. Can be used to complete tasks such as information retrieval, customer service, and process automation.
Artificial intelligence	Many potential use cases across the continuum of care, but scientific evidence is currently at an early stage.

comprehensive treatment; goes beyond the primary condition to address comorbidities, lifestyle behaviour modification, and preventing potential complications 3) *multidisciplinary teams;* includes significant roles for nurses and allied health professionals [63] and 4) *use of technology;* supports integrated care approaches. Integrated care is a cornerstone of atrial fibrillation guidelines [64–68], which can serve as an example for other cardiovascular conditions.

Patient-centred, integrated, multidisciplinary models of care should deliver comprehensive, culturally safe and holistic care. These models should follow a whole-of-systems approach that is co-produced with and responsive to individuals' needs, and coordinated across the continuum of care, including primary care and general practice [68,69]. An example of integrated care between the specialist and community led services is a heart failure up-titration clinic, inclusive of self-management education [70]. Involving patients as central decision makers, including presenting a range of tailored care options, when possible, can empower greater patient autonomy.

The multidisciplinary team should be matched to patient and carer needs and may include a cardiologist, cardiac surgeon, general practitioner, registered nurse, nurse practitioner, pharmacist, psychologist, physiotherapist, exercise physiologist, cardiac physiologist, dietitian, occupational therapist, and social worker. Supporting Māori, Aboriginal, and Torres Strait Islander clinicians to advance to senior healthcare leadership roles is vital to address health inequities and integrate First Nations perspectives into telehealth systems. Effective inter-professional collaboration is vital to support healthcare professionals and health workers who care for people in geographically isolated, underserviced, and low socioeconomic areas and communities. This may include the use of translated materials or interpreters for culturally and linguistically diverse patients and families.

Benefits of integrated care on clinical outcomes, healthcare utilisation, self-management, self-care ability, and patient reported outcome measures have been demonstrated by clinical trials [69,71–75]. An example integrated care model in atrial fibrillation is included in Appendix D.

Fully virtual models of care were successfully demonstrated during the COVID-19 pandemic [76–79] and can play an important role to improve the overall reach and accessibility of cardiovascular care. Hybrid models that combine telehealth and in-person delivery can enable more comprehensive, flexible, and convenient care [80]. For example, bridging the gap between in-person visits with remote interactions that increase convenience and accessibility for patients and healthcare providers while retaining benefits of periodic in-person care [81].

Telehealth may be used to assess patient health status (including physiological assessment, see section *Remote physiological assessment*) and treatment response. This can enable closer monitoring of complex patients (e.g., frail,

multimorbid), and delivery of self-management education, counselling, and secondary prevention (see *Secondary Prevention*) [82]. Telehealth can also provide strong links between specialist cardiac care services and Aboriginal-, Māori-, and Pasifika-led community health services. Healthcare providers should regularly assess patients' circumstances and healthcare needs to determine the most appropriate model(s) of care.

Telehealth Consultations

Telehealth consultations should be conducted using video whenever possible, rather than telephone. Key components of sustainable telehealth consultations are: 1) a collaborative and integrated multidisciplinary team (see *Models of Care*), 2) strong community ties including kaupapa and Aboriginal Community Controlled Health Organisations to ensure culturally safe and appropriate care (see *Aboriginal, Torres Strait Islander, Māori, and Pasifika Peoples*), 3) evaluation of outcomes that are important to patients and health services (see *Evaluation*), and 4) sharing learnings with the wider community to support service adaptation and growth (see *Co-design of telehealth models of care* and *Evaluation*). The Australian Health Practitioner Regulation Agency (2025 – with a focus on patient safety) [46], the Medical Board of Australia (2023) [83], the Medical Council of New Zealand (2023) [84] provide guidelines for telehealth consultations. Resources for practical guidance are available from the Australian Digital Health Agency [85] and the New Zealand Telehealth Forum and Resource Centre [86].

Infrastructure, equipment, and environment
Successful telehealth consultations require effective communication between patients, carers, and clinicians. Technology, privacy, and digital literacy are important considerations. For full and regularly updated patient safety recommendations, see the Australian Health Practitioner Regulation Agency (2025) [46]. Privacy must be ensured by using a suitable physical space (e.g., clinic room or office), for a detailed checklist see [87]. Ambient noise and lighting fluctuations can compromise audio and video quality [88].

Videoconferencing requires an internet connection speed of at least 0.7 MB/s for audio visual data streaming [88]. Internet speed tests are built into most telehealth platforms upon set up or can be performed via internet providers [89]. Patients also require a camera, screen, microphone, and speakers for visual and audio input and output, respectively. Over 90% of Australians own a smart phone, making this mode more reachable and achievable than ever.

Clinician capability to effectively communicate instructions on using telehealth to patients/caregivers, interpreters, and other participating clinicians (when relevant) is also essential for effective teleconsultations. The COVID-19 pandemic drove an increase in technical proficiency and skill enhancement; however, this was less pronounced in older and geographically remote Australians [89]. When required, patients should be encouraged to access additional support from family members and caregivers, or via

primary care (e.g., General Practitioner, Practice Nurse), secondary care (e.g., Aboriginal and Torres Strait Islander and Maori and Pasifika liaison officers), local health services and primary health networks (e.g., telehealth support officers), or community care (e.g., nurse navigators). These additional supports can help to ensure the most vulnerable patients are not further disadvantaged [53].

Remote physiological assessment
Remote physiological assessment and monitoring can facilitate patient engagement and self-monitoring, inform timely intervention via early detection of changes in health condition, and improve outcomes (e.g., reduced heart failure exacerbations; increased atrial fibrillation detection) [90–92].

Remote monitoring requires properly resourced and structured institutional systems with standardised protocols for responding to detected health events. Monitoring frequency should be set to avoid unsustainable workloads for clinical teams and be clarified with patients to manage their expectations. In regional and remote communities, it is important to investigate data transmission within the local health service context, and test quality and viability before investing further in implementing remote physiological assessment.

Increasingly sophisticated, accurate, and widespread technologies provide patients and clinicians with an expanding range of tools [90–92]. However, it is important to use devices that are safe and effective as indicated by approval from jurisdictional regulatory bodies like the Therapeutic Goods Administration (Australia) and Medicines and Medical Devices Safety Authority (New Zealand), or inclusion in an authorised prescriber pathway. However, given the rapid evolution of technology and rise of direct-to-patient sales, the lack of such approval should not preclude cautious examination of device data supplemental to established assessment/diagnostic practices [90,91]. In particular clinicians should consider use of wearable/personal monitoring devices (e.g., blood pressure, heart rate, oxygen saturation, weight) where there is high-quality supporting evidence (e.g., heart failure telemonitoring) [93,94]. Data interpretation and subsequent management decisions must consider device accuracy and reliability. Electrocardiogram (ECG)-capable smartwatches and personal-ECG devices can produce high-fidelity recordings [95] but plethysmography-based heart rate monitors (e.g., consumer-grade smart watches) are less reliable, and secondary confirmation should be sought [95].

Telecardiology investigations
Telecardiology investigations (e.g., ECG, Holter monitoring, electrocardiography, exercise stress testing) have transformed diagnosis in regional, rural, and remote areas by minimising the travel required to undergo assessments and receive reports from specialist metropolitan centres. Videoconferencing can allow specialists to provide remote testing and reporting support to regional, rural and remote health services; this capability has proven successful in New South Wales and Queensland [96].

Digital referrals, diagnostic test requests and medication prescribing
Telehealth can enable fast and effective delivery and fulfillment of post-consultation referrals (e.g., cardiac imaging, pathology testing) and medication prescriptions [97]. Based on the health service software, prescriptions may be sent electronically directly to the patient and/or their local pharmacy [97].

Secondary Prevention

Secondary prevention interventions such as multifactorial cardiac rehabilitation are effective for people with cardiovascular disease [98,99] but barriers to attending in-person delivery models contribute to persistently low attendance (28.4% of eligible Australians, 30% of eligible New Zealanders [100–102]). Growing evidence shows telehealth delivery is safe and effective for improving short-term health and clinical outcomes (e.g., quality of life, rehospitalisation risk, cardiac event risk, functional capacity, risk factor profile), and these effects are comparable to in-person programs [103–106]. However, other than the telephone-delivered COACH program, there is limited local evidence for long-term benefits or translation of research into clinical practice [4].

Telehealth can deliver all core components of secondary prevention including exercise and physical activity, education and self-management, and psychosocial support.

Exercise and physical activity
Exercise training is the most challenging secondary prevention component to deliver via telehealth and there is uncertainty about the best approach [107–109]. The American Heart Association describes three scenarios [11]:

1) **Synchronous virtual:** patients record and transmit exercise data in real-time during exercise training and receive real-time support from remotely located clinicians.
2) **Asynchronous virtual:** patients record and transmit exercise data during or after exercise training and receive delayed support from remotely located clinicians.
3) **Synchronous in-person**: in-person exercise supervision augmented with digital technologies.

Many technologies can be used in multiple scenarios (e.g., remote exercise monitoring can support synchronous and asynchronous care) [110], and in parallel or sequential combination with in-person delivery [111].

Evaluating exercise capacity is essential to inform individualised exercise prescription [99]. Telehealth methods for assessing aerobic and functional capacity are not well researched [112] but available evidence has been summarised in a companion CSANZ position statement [93]. Key considerations relate to safety (exercise contraindications; digital literacy; exercise location and hazards; adverse event action plan), test protocol selection (six-minute walk test, one minute sit-to-stand, Timed Up and Go, 5 x sit-to-stand); equipment and space requirements; and monitoring (e.g., blood pressure, heart rate).

Telehealth exercise prescription should adhere to general principles for cardiac populations [93]. How prescriptions are communicated to patients and monitored by clinicians will vary between delivery models and types of technologies (Table 1). Synchronous or asynchronous monitoring of vital signs and exercise performance can add value by enhancing personalisation and risk management [113] and have recently been associated with better functional outcomes — particularly when wearable measurement devices are combined with smartphone applications and instant communication tools [106]. However, a lack of monitoring should not preclude exercise assessment or training in the absence of contraindications.

Education and self-management support
Tailored education and self-management support have been effectively delivered via telephone, video-conference and low-cost text message interventions [114,115], which can enhance access to allied health professionals (i.e., dietitians, psychologists) [107,111,116]. Pre-recorded versions of in-person education sessions can allow on-demand playback and sharing with whānau, family members, carers, and friends [117], and varied delivery to suit different learning styles and preferences (e.g., utilising web-based information, videos, self-paced online learning modules).

Psychosocial support
Telehealth interventions have had mixed effects on psychosocial outcomes [118], though numerous trials noted improvements over traditional in-person care [103]. Internet based cognitive behavioural therapy for cardiovascular patients can have moderate short-term and sustained effects on depression [119,120]. Similarly, online self-management programs can reduce depression and anxiety while increasing physical activity, especially when combined with telephone support [121]. Clinicians should seek to understand the ways in which mood, especially in the first 90 days post discharge, influences the trajectory of health behaviours and participation in secondary prevention activities.

Facilitating social support via telehealth remains challenging as it can alter group dynamics and diminish peer support, both of which have demonstrated benefits [117]. Future research, greater patient and staff familiarity with online platforms, skilled facilitators and creation of online groups may help strengthen social support in telehealth secondary prevention programs.

Implementing Telehealth in Clinical Practice

Effective implementation of telehealth in cardiovascular care will require health service providers to reflect on organisational context, resourcing, change management, patient suitability, digital literacy, intervention design, and privacy and security [113]. A full review is outside the scope of this statement but a sample of prompting questions is provided in Figure 2 [113].

Figure 2 Considerations for implementing telehealth secondary prevention (adapted from Rawstorn et al. [113] under the CC BY license).

Workforce and Training

Telehealth should integrate with existing health systems, processes, and workplace culture, which can vary widely across Australia and New Zealand. Suitable approaches to integration should be informed by mapping current activities and systems, in conjunction with clinicians, administrative staff, and patients [107]. Consideration should be given to staff ratios, clinician seniority, scheduling processes, administrative support, patient management systems, maximising uniformity of content across different delivery models, and supporting cultural leadership among Aboriginal, Torres Strait Islander, Māori, and Pasifika staff [122].

Staff capacity is a significant issue during adoption as new delivery models can add pressure to existing staffing challenges [107,117]. Staff training (initial and ongoing) and responsive technical support are required to establish and maintain workforce confidence and competence [107]. Staff training should support culturally responsive use of telehealth (see *Culturally safe, responsive, and inclusive telehealth*) [123].

Evaluation

Evaluating a telehealth service is crucial to optimise quality of care, patient outcomes, and resource allocation. Evaluation should address four key areas as outlined below [124].

Table 2 Examples of healthcare outcome and evaluation data.

Measure	Data source
Healthcare utilisation (e.g., emergency department presentation, hospital admission, patient-initiated contact, action plan utilisation)	Patient self-report/questionnaire; electronic medical record; administrative data
Adherence to telehealth services	Days per year of data entry
Mortality	Electronic medical record review; registry data; family contact
Health-related Quality of Life	Validated patient questionnaire
Patient experiences	Patient questionnaire and/or interview; could include health literacy measures

Evaluation should follow a quality improvement cycle (e.g., Plan, Do, Study, Act [125,126]) to identify gaps in service delivery, implement changes and evaluate their effects. Table 2 provides examples of healthcare outcomes and evaluation data.

First Nations epistemology and ontology should be considered, with appropriate cultural protocols and ways of being, knowing and doing. Yarning, hui, Talanoa and storytelling with Aboriginal, Torres Strait Islander, and Māori and Pasifika Peoples are important for creating, constructing and sharing knowledge of patient and community [127–129].

Access evaluation

This includes equity for patients, carers, family, whānau; access for clinicians, access to information. Data informing access, utilisation, and engagement may include uptake and dropout, wait list times, and service availability and capacity. These data may be available through national or state minimum datasets (e.g., in Queensland, Australia; the Queensland Cardiac Outcomes Registry).

Cost evaluation

This includes the cost to the patient, care team and health service. Data to inform cost evaluation may include process measures such as the numbers of medications prescribed, diagnostic tests ordered, and patients reviewed and referred. If the evaluation aims to secure ongoing funding, outcome measures which determine the impact of the telehealth on service provision costs and outcomes (see *Effectiveness evaluation*) should be considered. These data are often available through integrated medical records, pharmacy, and clinical costing departments. Cost-effectiveness studies and research to quantify societal costs and benefits are encouraged.

Patient experience evaluation

This includes the experience for the patient and their carers/family/whānau and clinicians. The routine collection of validated patient reported experience and outcome measures, in combination with patient and clinician experience surveys and interviews, can guide benchmarking and quality improvement [118,122–124].

Effectiveness evaluation

This includes effectiveness for system, clinical, economical, operational and technical, safety outcomes. Assessing whether telehealth is effective involves multiple factors from differing perspectives. From the clinician perspective, effective telehealth enables assessment of patients' current health state and provision of holistic care that meets patients' current and anticipated needs [130]. It is also important to consider patient, government (e.g., cost to health care system, Medicare Benefits Schedule [MBS], Pharmaceutical Benefits Schedule [PBS]) and societal perspectives (productivity, e.g., return to work).

Concluding Remarks and Recommendations

Telehealth offers opportunities to improve access, equity and outcomes for people requiring cardiovascular care, and in particular, to provide complementary care in addition to in-person healthcare delivery. It can effectively deliver comprehensive care—including multidisciplinary services and secondary prevention—when used in the right way, at the right time, by and for the right people. Healthcare practitioners must be aware of and adhere to professional obligations as set out by relevant regulatory authorities for using telehealth safely and effectively.

However, challenges related to inclusiveness (e.g., cultural safety and sensitivity, digital literacy, technology accessibility) and large-scale implementation in clinical practice (e.g., resourcing, change management, capacity development) must be addressed to fully achieve potential benefits.

Co-designing telehealth services with patients, carers, healthcare providers, and diverse community representatives is essential to promote inclusivity and cultural safety. This collaborative model is especially important for communities who experience the greatest inequities, including Māori, Pasifika, Aboriginal, and Torres Strait Islander Peoples and people with disability or complex care needs. Digital inequities must be addressed with education and infrastructure strategies to enable widespread engagement.

Clinician education and training must promote 1) cultural safety development—by enhancing understanding and critical self-reflection on the historical impacts of colonisation which persist today in health inequities for Aboriginal, Torres Strait Islander, Māori and Pasifika Peoples; 2) keep abreast of digital health transformation and implementation; and 3) advance skills in effective delivery of individual and group-based social support.

Robust evaluation frameworks are needed to assess the effectiveness of telehealth on patient outcomes, service efficiency, and cost. Future research should aim to identify patient populations who benefit most from telehealth—so models of care can be appropriately targeted—and understand the training and support required by patients, carers and clinicians to optimise implementation and use. Policymakers should prioritise infrastructure, workforce and sustainable operating models to ensure telehealth remains a viable, equitable, scalable healthcare delivery model across Australia and New Zealand.

Author Contributions

S.C.: Writing – Original Draft; Writing – Review and Editing; Supervision, Project administration. J.C.R.: Writing – Original Draft; Writing – Review and Editing; Visualisation; Supervision, Project administration. C.B.: Conceptualisation, Writing – Original Draft; Writing – Review and Editing; Supervision, Project administration. C.M.A.: Conceptualisation, Writing – Original Draft; Writing – Review and Editing; Supervision, Project administration. H.A.: Writing – Original Draft; Writing – Review and Editing. K.B.: Writing – Original Draft; Writing – Review and Editing. N.K.B.: Writing – Original Draft; Writing – Review and Editing. A.D.: Writing – Original Draft; Writing – Review and Editing. R.E.: Writing – Original Draft; Writing – Review and Editing. A.G.: Writing – Original Draft; Writing – Review and Editing. T.H.: Writing – Original Draft; Writing – Review and Editing. J.M.H.: Writing – Original Draft; Writing – Review and Editing. A.C.S.: Writing – Original Draft; Writing – Review and Editing. N.S.: Writing – Original Draft; Writing – Review and Editing. E.E.T.: Writing – Original Draft; Writing – Review and Editing. U.T.: Writing – Original Draft; Writing – Review and Editing. D.C.: Writing – Original Draft; Writing – Review and Editing. R.A.C.: Writing – Original Draft; Writing – Review and Editing. P.M.D.: Writing – Original Draft; Writing – Review and Editing. R.G.: Writing – Original Draft; Writing – Review and Editing. P.I.: Writing – Original Draft; Writing – Review and Editing. D.J.K.: Writing – Original Draft; Writing – Review and Editing. J.L.: Writing – Original Draft; Writing – Review and Editing. A.L.: Writing – Original Draft; Writing – Review and Editing. R.M.: Writing – Original Draft; Writing – Review and Editing. A.J.M.: Writing – Original Draft; Writing – Review and Editing. K.N.: Writing – Original Draft; Writing – Review and Editing. M.T.N.: Writing – Original Draft; Writing – Review and Editing. M.O.C.: Writing – Original Draft; Writing – Review and Editing. A.O.N.: Writing – Original Draft; Writing – Review and Editing. S.O.: Writing – Original Draft; Writing – Review and Editing. N.J.P.: Writing – Original Draft; Writing – Review and Editing. E.D.P.: Writing – Original Draft; Writing – Review and Editing. S.J.R.: Writing – Original Draft; Writing – Review and Editing. R.A.P.: Writing – Original Draft; Writing – Review and Editing. GS: Writing – Original Draft; Writing – Review and Editing. C.V.V.: Writing – Original Draft; Writing – Review and Editing. S.C.I.: Conceptualisation; Methodology; Writing – Original Draft; Writing – Review and Editing; Supervision, Project administration.

Appendix A. Declaration of Competing Interests

For transparency, Appendix A lists those authors and their declared conflicts of interest. The remaining authors declare no conflicts of interest.

A,C.S.: Current Director and/or shareholder, RMI Oceania Pty. Ltd. (commercial robotic ultrasound), Mededu Pty Ltd (commercial online health education), Cardiac Fitness Pty Ltd (commercial cardiology education), White Cloud Foundation (voluntary tele-mental health service delivery), Cardiac Investigations Unit, Royal Brisbane and Women's Hospital (created Tele-Cardiac Investigations Program, currently providing services to regional/rural and remote health organisations).

C.V.V.: Chief Executive Officer, Heart Support Australia which has received grants, speaking fees and travel support in the past 5 years from Amgen, Novartis, Edwards Lifesciences, CSL Seqirus, AstraZeneca, Viatris, and Bristol Myers Squibb. Authored research publications cited in this position statement.

E.D.P.: Received speaking fees and travel support in the past 5 years from Pfizer and Bristol Myers Squibb. Authored research publications are cited in this position statement.

E.E.T.: Authored research publications are cited in this position statement.

H.A.: Authored research publications are cited in this position statement.

J.C.R.: Authored research publications are cited in this position statement. Current committee member, Australian Cardiovascular Health and Rehabilitation Association (voluntary). Telehealth technology inventor (intellectual property owned by Deakin University; no financial benefits received over and above regular research salary).

J.M.H.: Authored research publications are cited in this position statement.

N.K.B.: Received speaking and advisory board fees from Pfizer, Bridge Bio, Novo Nordisk, Bristol Myers Squibb in the past 5 years.

R.A.C.: Authored research publications are cited in this position statement.

S.C.: Authored research publications are cited in this position statement. Current committee member, Australian

Cardiovascular Health and Rehabilitation Association (voluntary). Previous committee member Cardiac Society of Australia and New Zealand (voluntary).

S.C.I.: Authored research publications are cited in this position statement. Committee chair (Professional and Ethical Standards Committee 2022–2025) and member (Quality Standards Committee), Cardiac Society of Australia and New Zealand (voluntary).

S-Y.O.: Founding Director, Connected Health Technologies Pty. Ltd., trading as Apostele (commercial remote monitoring technology vendor).

S.R.P.: Authored research publications are cited in this position statement.

T.H.: Current board member, World Heart Federation and Chief Executive Officer, Hearts4heart charity, which has received grants from Abbott, Amgen, AtriCure, Biotronik, Boehringer Ingelheim, Boston Scientific, Edwards, GSK, Medtronic, NovoNordisk, Novartis, Pfizer, Seqirus/CSL.

Appendix B. Abbreviations and Acronyms

- ACRA: Australian Cardiovascular Health and Rehabilitation Association
- CSANZ: Cardiac Society of Australia and New Zealand
- COVID-19: Coronavirus or SARS-CoV-2
- CVD: cardiovascular disease
- ECG: electrocardiogram
- MBS: Medicare Benefits Schedule
- PBS: Pharmaceutical Benefits Schedule
- UNDRIP: United Nations Declaration on the Rights of Indigenous Peoples

Appendix C. Telehealth Challenges and Opportunities

Appendix C Telehealth challenges and opportunities

System		Service		Individual	
Challenge	Opportunity	Challenge	Opportunity	Challenge	Opportunity
• Remuneration and flexible funding • Lack of existing infrastructure to support telehealth • Policy and governance • Privacy, security and quality concerns • Professional buy-in • Public vs private healthcare systems • Service providers	• Address healthcare access demands and inequities in Australia and New Zealand • Reduced healthcare expenditure • Clinically effective and cost-effective solutions • Facilitating person-centred Māori, Pasifika and Aboriginal and Torres Strait Islander peoples care • Meet healthcare needs as the population changes	• Lack of infrastructure, standardisation, incentives, knowledge, and training • Limited evidence supporting remote cardiovascular disease care delivery models • Privacy and confidentiality • Continuity of care – access to treatment recommendations • Provider adoption • Lack of workforce education and competencies • Low digital literacy • Connectivity between multidisciplinary teams	• Cost saving (time, service delivery) • Develop workforce • Improve clinical outcomes • Potential for improved Quality Audits	• Disengagement with clinician, program of care • Increased cost (phone/internet, infrastructure) • Unmet healthcare need • Access to recommended treatment (e.g., prescriptions, similar access amongst different providers) • Lack of intervention co-design approaches • Exacerbate inequities • Low digital literacy	• Flexibility of attendance • Reduced cost (time, transport, social support) • Reduce waiting times to address healthcare needs • Improved clinical outcomes • Increased frequency of follow up at times of exacerbation • Improved communication for multilingual patients • Improved access to specialist care and multidisciplinary teams

Appendix D. Example of an Integrated Care Model Incorporating Telehealth - TELECHECK-AF

TELECHECK-AF is an example of an integrated care model incorporating telehealth with remote monitoring [78,79].

During the pandemic, in the Netherlands a remote integrated mHealth infrastructure was rapidly implemented to remotely monitor patients with atrial fibrillation. This TeleCheck-AF approach consists of three crucial components: 1) a structured teleconsultation (Tele); 2) an app-based on demand heart rate and rhythm monitoring infrastructure (Check); and 3) comprehensive atrial fibrillation treatment. The mHealth component used photo-plethysmography (PPG) technology through the built-in camera of the phone. By putting a finger in front of the camera, heart rate and rhythm can be measured within 1 minute and then sent to a secured cloud where the data is available for health care professionals for preparation of the teleconsultation. This approach demonstrated to be highly effective and efficient in maintaining atrial fibrillation care delivery, and was rapidly disseminated in >40 cardiac centres throughout Europe [79] and evaluated [78].

This is one example along with other examples that were developed in Australia during the COVID-19 pandemic [131].

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